

Policy Options
<b>STATEWIDE GHG EMISSIONS</b>
<b>ENERGY SUPPLY</b>
Renewable And Low Emitting Energy
Advanced Fossil Fuel Strategies
Other Electricity Measures
Distributed Generation
Emissions Policies
Grid and Utility Policies
Education/Awareness
Natural Gas System
Hydrogen
<b>RESIDENTIAL/COMMERCIAL/INDUSTRIAL</b>
<b>Residential</b>
<i>Equipment and Appliances: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>
<i>Buildings: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>
<i>Other</i>
<b>Commercial</b>
<i>Equipment and Appliances: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>
<i>Buildings: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>
<i>Other</i>
<b>Industrial</b>
<i>Improve Efficiency and Increase Use of Lower-GHG Fuels</i>
<i>Reduce High GWP Gas (HFCs, PFCs, SF6) Emissions</i>
<i>Other</i>
<b>TRANSPORTATION</b>
Energy Efficiency
Alternative Fuels
Smart Growth
Other
<b>AGRICULTURE</b>
Production of Fuels and Electricity
Fertilizer and Manure Management
Soil Carbon Management
Land use change
Farming Practices
<b>FORESTRY</b>
Biomass Protection And Management
Wood Products And Waste
Energy Production
<b>OTHER OPTIONS</b>

DRAFT Climate Change Policy Options

Policy Options*	EPA Tabulation of Most Popular Recommendations from Climate Action Plans**	Recommendations from EPA Clean Energy-Environment Guide to Action Policy	Policies in Place in Western States	Proposed Policies for UTAH***	AZ and NM Recommendations
<b>STATEWIDE GHG EMISSIONS</b>					
GHG registry			CA		AZ, NM
GHG reduction target			AZ, CA, NM		AZ
Climate adaptation strategy*					AZ
State GHG reporting*					AZ, NM
Public education and outreach on climate change*					AZ, NM

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<b>ENERGY SUPPLY</b>					
<b>Renewable And Low Emitting Energy</b>					
Renewable Portfolio Standards	X	X	AZ, CA, CO, MT, NM, NV		AZ, NM
Public Benefit Charge Funds	X	X			
Tax Credits and Incentives	X	X	AZ, CA, MT, OR, WA, UTAH	UEES, EPWG	AZ, NM
Green Power Purchases and Marketing	X	X	AZ, CA, MT, NV, NM, WA		NM
Support for wind development (zoning, siting, etc.)	X				
Advance Biomass Technology support (e.g. Gasification)	X				
Research and Development (R&D)	X				NM
Landfill Gas Recovery	X				
Waste to Energy	X			UEES	
Reduced energy consumption of on-site renewable energy sources (especially if fossil fuels are used in production)				SEEP	
Solar hot water systems as element of new building code*					NM
Solar hot water-ready and solar PV-ready new building code*					NM
<b>Advanced Fossil Fuel Strategies</b>					
Carbon Capture and Sequestration (CCS)	X				NM
Combined H2/electricity production from fossil fuels with sequestration	X				
Advanced fossil technologies (e.g. IGCC)	X				NM
Fuel Cell Development Incentives	X				
Tax Credits and Incentives	X	X		UEES	
Research and Development (R&D)	X				NM
CO2 reduction from fuel combustion in oil and gas operations*					NM
<b>Other Electricity Measures</b>					
Efficiency Improvements and Repowering Existing Plants	X				
Nuclear Plant Relicensing and Upgrading	X				NM

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<b>Distributed Generation (DG)</b>					
Combined Heat and Power Incentive Policies and Barrier Reduction	X	X		UEES, SEEP	AZ, NM
<b>Emissions Policies</b>					
Utility sector GHG Cap and Trade	X				AZ, NM
Generation Performance Standards	X	X		UEES	NM
GHG Offset/mitigation requirements for new power plants	X		OR, WA		
Voluntary Utility CO2 Targets and/or Trading	X				NM
CO2 Tax	X				
<b>Grid and Utility Policies</b>					
Interconnection Rules for clean, distributed generation	X	X		UEES	
Remove Transmission and Other Barriers for Renewable and other Clean DG	X	X		UEES	NM
Net Metering	X	X	almost all states		AZ
Pricing and metering strategies	X	X		UEES	AZ, NM
Remove Utility Rate Barriers	X	X		UEES	
Advanced Metering	X				AZ, NM
Time-of-use Rates	X			UEES	AZ, NM
Load Management (no clear GHG savings)	X	X		UEES	
Transmission System Upgrading	X				NM
Reduce Transmission and Distribution Line Loss	X				
Integrated Resource Planning*			UT		AZ, NM
<b>Education/Awareness</b>					
Brownfield Re-development	X				NM
Environmental (emissions) Disclosure	X				
Public Education	X			UEES, SEEP	NM
Energy and environmental/climate focus in higher education (including incentives for institutions offering course work in this area)*/****					NM
Adopt a threatened mascot-animal for Utah to generate awareness of climate change****					
<b>Natural Gas System</b>					
Leakage reduction program	X				NM
<b>Hydrogen</b>					
Incentives for hydrogen development	X				

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<b>RESIDENTIAL/COMMERCIAL/INDUSTRIAL</b>					
Mandatory Reporting of Fuel Use, GHG Emissions		X			
Voluntary Reporting of Fuel Use, GHG Emissions		X			
Government Agency Requirements and Goals (including procurement)		X			AZ, NM
Cross-sectoral Energy Efficiency Funds or Requirements (e.g. Public Benefit Funds, Utility Savings Goals, or Energy Portfolio Standards)	X	X		UEES	AZ
Negotiated Emissions or Energy Savings Agreements					
Advanced Building Design Standards for State-owned Buildings; Energy efficiency for State-owned Buildings			UT	EPWG	
Green Power	X	X	OR, WA		NM
<b>Residential</b>					
<i>Equipment and Appliances: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>					
Appliance Efficiency Standards	X	X		UEES, EPWG	AZ, NM
Promotion and Tax or Other Incentives (e.g. Energy Star products, solar hot water heaters)	X	X		UEES	
Utility/DSM Programs (also applies to buildings below)	X	X	UT	UEES	NM
Market transformation and technology development programs (also applies to buildings)	X				NM
Consumer education programs	X				NM
Focus on specific end-uses/technologies: window AC units, lighting, water heating, plug loads, etc.	X				
Bulk Purchasing Programs for Public Housing and New Developments	X				
Appliance Recycling/Pick-Up Programs	X				
<i>Buildings: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>					
Incentives for Improved Design and Construction (e.g. Energy Star, green buildings, expedited permitting)	X	X	UTAH	UEES, SEEP	AZ, NM

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Focus on specific market segments: existing homes (weatherization), new construction, apartments, low income, etc.	X			UEES	
Contractor and Builder Education (e.g. : Proper sizing of HVAC, duct sealing)	X				NM
Improved Building Codes	X	X	OR, WA	UEES, EPWG	AZ, NM
Training and Enforcement of Building Codes	X			UEES, SEEP	AZ
White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs)	X				
Education to homeowners	X			SEEP	NM
Training of Building Managers (Apartments, etc.)	X			SEEP	
<i>Other</i>					
Incentives for Renewable Energy Applications (Solar roofs, water heaters, etc.)	X	X		UEES	AZ, NM
Green Power Programs	X	X			NM
Clean Combined Heat and Power	X	X		SEEP	AZ
Fuel Switching to less carbon-intensive fuels	X				
Net-metering policies	X	X			AZ
Time of Use Rates	X	X		UEES	AZ, NM
Shared Savings Program for Government Agencies	X				
Marketing Programs	X				
Introduce in School Curriculum	X			UEES,EPWG	
Water pumping and treatment efficiency****					
<b>Commercial</b>					
<i>Equipment and Appliances: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>					
Appliance Efficiency Standards	X	X		UEES	AZ, NM
Promotion and Tax or Other Incentives (e.g. Energy Star, credits for solar hot water)	X	X		UEES	
Bulk Purchasing Programs	X				
Utility/DSM Programs	X	X	UT	UEES	NM
Market transformation & technology development programs	X				NM
Focus on specific end-uses: lighting, water heating, office equipment, etc.	X				
Incentives for climate mitigation-related businesses					

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<i>Buildings: Improve Efficiency and Increase Use of Lower-GHG Fuels</i>					
Promotion and Incentives for Improved Design and Construction (e.g. LEED, green buildings)	X	X		UEES	NM
White Roofs, Rooftop Gardens, and Landscaping (Shade Trees)	X				
Improved Building Codes	X	X		UEES	AZ, NM
Training and Enforcement of Building Codes	X			UEES	AZ
Increased use of blended cement	X				
Goals and Reporting for Government Buildings	X	X	UT		AZ, NM
Building Commissioning and Recommissioning	X		UT		
Energy Management Training / Training of Building Operators	X	X			NM
Energy Tracking and Benchmarking	X	X			
<i>Other</i>					
Incentives for Renewable Energy Applications (Solar roofs, etc.)	X	X		UEES, EPWG	AZ, NM
Green Power Purchases	X	X			NM
Clean Combined Heat and Power	X	X			AZ, NM
Fuel Switching to less carbon-intensive fuels	X				AZ
Net-metering policies	X	X			AZ
Time of Use Rates	X	X		UEES	AZ, NM
Reinvestment Fund	X	X			
Municipal Energy Management	X	X			
Water pumping and treatment efficiency****					
<b>Industrial</b>					
<i>Improve Efficiency and Increase Use of Lower-GHG Fuels</i>					
Promotion and Tax or Other Incentives (e.g. Energy Star, credits for solar hot water)	X	X		UEES	
Bulk Purchasing Programs	X				
Utility/DSM Programs	X	X	UT	UEES	NM
Market transformation and technology development programs, industry coalitions	X			UEES	

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Focus on specific end-uses: motors, pump systems, boilers, steam system upgrades, process-specific equipment.	X				
Focus on Small and Medium Enterprises (SMEs)	X				
Promotion and Incentives for Improved Design and Construction (e.g. LEED, green buildings, expedited permitting)	X	X		UEES	NM
Support for switching to less carbon-intensive fuels (coal and oil to natural gas or biomass)	X				AZ
Improved Building Codes, Training and Enforcement	X	X		UEES, EPWG	AZ, NM
Energy Management Training / Training of Building Operators	X	X		UEES	NM
Energy Tracking and Benchmarking	X	X			
<i>Reduce High GWP Gas (HFCs, PFCs, SF6) Emissions</i>					
Participation in Voluntary Industry-Government Partnerships	X				
Process Changes/ Optimization	X				
Leak Reduction /Capture, Recovery and Recycling of Process Gases	X				
Use of Alternative Gases (other HFCs, hydrocarbon coolants, etc.)	X				AZ, NM
<i>Other</i>					
Incentives for Renewable Energy Applications (Solar roofs, etc.)	X	X		UEES	AZ, NM
Industry-Specific Emissions Cap and Trade Programs	X				NM
Negotiated Agreements	X			UEES	
Green Power Purchases	X	X			NM
Clean Combined Heat and Power	X	X		EPWG	AZ, NM
Industrial ecology/ by-product synergy	X				
Cement Industry: Clinker reduction/substitution, use of alternative fuels	X			UEES	
Net-metering policies	X	X			AZ



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Time of Use Rates, Load Management and Curtailment Programs	<b>X</b>	<b>X</b>		<b>UEES</b>	<b>AZ, NM</b>
Water pumping and treatment efficiency****					

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<b>TRANSPORTATION</b>					
<b>Energy Efficiency</b>					
Advanced vehicle tech promotion (eg. hybrids)*					<b>AZ</b>
Improve fuel efficiency of state vehicle fleets				<b>EPWG</b>	<b>AZ, NM</b>
Clean Car Program/Other EE program*			<b>CA</b>		<b>AZ, NM</b>
Low rolling resistance tires and tire inflation*					<b>AZ, NM</b>
60 mph speed limit for commercial trucks/other lower speed limits*					<b>AZ, NM</b>
Intermodal freight initiatives/truck to rail*					<b>NM</b>
Idle-reduction program/truck stop electrification*					<b>AZ, NM</b>
<b>Alternative Fuels</b>					
Promote clean fuels/biofuels			<b>UT</b>		<b>AZ, NM</b>
<b>Smart Growth</b>					
Smart growth/planning*					<b>AZ, NM</b>
Develop mass transit				<b>EPWG</b>	<b>AZ, NM</b>
Promote LEED for neighborhood development*					<b>NM</b>
<b>Other</b>					
Feebates (fee on high GHG vehicles; rebate on low GHG vehicles)*					<b>AZ, NM</b>
Pay-as-you-drive insurance*					<b>AZ, NM</b>
Accelerated replacement/retirement of high-emitting diesel (black carbon emissions reduction)*					<b>AZ, NM</b>
Telecommuting/trip reduction incentives****					

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<b>AGRICULTURE</b>					
<b>Production of Fuels and Electricity</b>					
Ethanol production	X				AZ, NM
Biodiesel production	X				AZ, NM
Manure Digesters (linked with manure management below)					AZ, NM
Ag Biomass Feedstocks for Electricity	X				AZ, NM
<b>Fertilizer and Manure Management</b>					
Nutrient Management (improve efficiency of fertilizer use)					
Reduce non-farm fertilizer use					
Manure Management *					
Composting					
Change feedstocks					
<b>Soil Carbon Management</b>					
Conservation tillage/No-till (sequestration and reduced energy use)*					NM
Reduce summer fallow					
Increase winter cover crops					
Improve water & nutrient use					
Rotational grazing/Improve grazing crops					
<b>Land use change</b>					
Convert land to grassland or forests	X				AZ, NM
Preserve open space/agricultural land					AZ, NM
Promote "no net loss" of agricultural land					
<b>Farming Practices</b>					
Convert farm equipment from diesel to LNG (or hybrids)					
Organic Farming					NM
Support Local Farming/Buy Local					AZ, NM

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<b>FORESTRY</b>					
<b>Biomass Protection And Management</b>					
Protection of forestland by reduced conversion to nonforest uses (urban, suburban, and rural lands)					AZ, NM
Afforestation and or restoration of nonforest land (including urban, suburban and rural lands)	X				AZ, NM
Increased maintenance of urban street and residential trees					NM
Reforestation of managed stands	X				AZ, NM
Increased stocking of poorly stocked lands	X				
Age extension of forest stands					
Thinning and density management					
Fertilization and waste recycling					
Short rotation woody crops (fiber and energy)					
Expanded use of genetically preferred species					
Modified biomass removal practices (reduced decay to forest floor)					
Fire management and risk reduction programs					
Forest health (pest/disease, invasive species) risk reduction programs					NM
Drought management programs – tree selection, placement, protection					
Flood and riparian management programs – tree selection, placement, protection					
Watershed management programs – stand retention, enhancement and management					
Habitat management programs – stand retention, enhancement and management					
<b>Wood Products And Waste</b>					
Improved mill waste recovery					
Improved logging residue recovery					
Expanded use of wood products for building materials					
Expanded use of state and local grown wood products					
<b>Energy Production</b>					

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Expanded use of Forest biomass feedstocks for electricity (fuel switching)	<b>X</b>				<b>AZ</b>
Improve efficiency of wood burning stoves and direct heat	<b>X</b>				
Improved energy capture from waste combustion	<b>X</b>				
Expanded landfill methane energy recapture (wood products waste)	<b>X</b>				
Improved commercialization of Biomass Gasification and Combined Cycle	<b>X</b>				<b>AZ, NM</b>

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<b>OTHER OPTIONS</b>					
Recycling/Solid Waste Management*					AZ, NM
Water conservation (no obvious link to GHG except for energy used to move water)*					AZ

\*From AZ and/or NM policy recommendations;  
 \*\*\*SWG

\*\*Includes Climate Change Action Plans completed through 2003; does not include recommendations from CT, MA

\*\*\*Options recommended by Utah Energy Efficiency Strategy (UEES); Governor's State Energy Efficiency Plan (SEEP) See "Advancing Energy Efficiency in the State;" [http://energy.utah.gov/energy/policy/utahs\\_energy\\_efficiency\\_policy.html](http://energy.utah.gov/energy/policy/utahs_energy_efficiency_policy.html); Legislature's Energy Policy Working Group (EPWG) and subgroups (Energy Efficiency, Consumption, & Consumers; Energy Development; and Governmental Operations).. Other possible sources: Questar and PacifiCorp DSM; E123

## DRAFT - Climate Change Stakeholder Working Group - Table of Acronyms and Terms

ACRONYM	TERM
BRAC	Blue Ribbon Advisory Council on Climate Change
CCS	Carbon Capture and Sequestration
CHP	Combined Heat and Power
CO2	Carbon Dioxide
DG	Distributed generation
DSM	Demand Side Management
EE	Energy efficiency
EPA	Environmental Protection Agency
EPWG	Energy Policy Working Group
GHG	Greenhouse Gas
GWP	Global Warming Potential
H2	Hydrogen
HFC	Hydrofluorocarbon
HVAC	Heating, Ventilation, and Air Conditioning
LEED	Leadership in Energy and Environmental Design
LNG	Liquified Natural Gas
PFC	Perfluorocarbons

PV	Photovoltaic (solar)
R&D	Research and Development
RE	Renewable energy
SEEP	State Energy Efficiency Plan (and Policy)
SF6	Sulfur hexafluoride
SMEs	Small and Medium Enterprises
SWG	Stakeholder Working Group
UEES	Utah Energy Efficiency Strategy



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#### DEFINITION

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Governor Huntsman's climate change advisory council comprised of interested stakeholders and political leaders in Utah

Utah State Legislature working group headed by Reps. Becker, Barrus, and Ure to develop an energy policy for Utah (2005-2006)

Solar panel technology for directly converting sunlight (solar energy) to electricity

Governor Huntsman's goal, policy, and plan for increasing energy efficiency by 20% by 2015

Effort sponsored by the Utah Energy Policy Advisor, Utah Clean Energy, the Southwest Energy Efficiency Project, and others to help meet the Governor's goal of improving energy efficiency in Utah by 20% by 2015